

MONTANA AERONAUTICS COMMISSION



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SEASON'S GREETINGS

From the Members of the

MONTANA AERONAUTICS COMMISSION

and

STAFF



Commission: Front Row—Gordon Hickman, Herb Jungemann, Walter Hope. Back Row—E. B. Cogswell, Carl "Bill" Bell, Clarence Anthony, Jack Hughes.

Official Monthly Publication
of the
**MONTANA AERONAUTICS
COMMISSION**

Box 1698
Helena, Montana

Tim Babcock, Governor

Charles A. Lynch, Director

Herb Jungemann, Chairman
Gordon Hickman, Vice Chairman
Walter Hope, Secretary
E. B. Cogswell, Member
Clarence R. Anthony, Member
Carl W. (Bill) Bell, Member
Jack R. Hughes, Member



1964 REGISTRATION NOW DUE

As of January 1st, 1964, all pilots residing in the state of Montana must re-register with the Montana Aeronautics Commission! New registration forms are being enclosed with the December issue of "Montana and the Sky" and will be available from all General Aviation Operators.

We ask that you obtain a new form and do not use the 1963 form as several changes in the form have been made. Please fill them out completely, sign and include your \$1.00 registration fee.

If you wish to be placed on the mailing list you must register by February 29, 1964, as the addressograph system will be revised shortly after the 1st of March. There will be a special listing for beginning pilots who will be receiving their certificates during the year.

As soon as you have registered you will receive the Airport Directory revisions which will be available shortly after the first of the year. Please notify MAC if you have a change of address, change of rating or acquire a new aircraft—these changes do not require a new registration if you have registered for 1964.

State registration is mandatory, however, it is used to benefit you as a Pilot or Operator—including the mailing list which is compiled from this record and is available for organizations and individuals—and provides vital funds for Search and Rescue operations in our state.

"FLY LEGAL — REGISTER NOW"

KNOW YOUR COMMISSION

Jack Wilson — New Safety and Education Officer



The Montana Aeronautics Commission announces the recent appointment of Jack Wilson as their new Safety and Education Officer. As of November 15th, Jack fills the position previously held by Richard J. "Dick" Munroe.

Jack Wilson has a full aviation background having made aviation his career and spending the past 20 years in the United States Air Force. Jack holds a Commercial license, single and multi-engine land, with an instrument rating. He began his flying career in 1942, spent time as a fighter pilot in the CBI—6 years at the Flight Test Center at Edwards Air Force Base, California—a B-29 bomber pilot in the Korean War and as a KC 97-Refueling Pilot, Chief Check Pilot and Chief of Standardization, at Biggs Air Force Base, El Paso, Texas and Malmstrom Air Force Base in Great Falls. Jack has spent the past four years flying mainly throughout Montana and is well acquainted with our terrain and our aviation problems.

Jack was born and raised in Cushing, Oklahoma, attended University of Southern California and the College of Great Falls. Jack has flown many air miles in the United States and to many spots around the globe, including England, India, Burma, Korea, as far north as Labrador, Newfoundland, and Alaska and south to Hawaii.

Jack immediately "took hold" in his job—acting as Course Manager on the Mechanic's Refresher Seminar just completed December 9th. To further prepare for his many duties ahead and particularly in the Montana Aeronautics Commission Educa-

tion program, Jack is presently attending a Course Manager's Seminar at Ohio State University.

Jack and his wife "Peg" have purchased a home in the Helena Valley, No. 1 Hilman Road, and reside with their two daughters, Susan Kay and Jacqueline.

AVIATION EDUCATION NOTEBOOK

By Mary Jo Janey

Recently I visited the Broadview High School to observe an aviation education program developed by Mr. Rolan Albright, flight operator at Roundup.

The program lasts for one week, and consists of a series of five lectures dealing with the following topics:

1. The philosophy of modern private and commercial aviation in our society today.

2. The theory of flight, with related subject in aero-dynamics.

3. Communications and navigation plus meteorology in relation to aviation.

4. Aircraft component parts, costs, functions, manufacturing problems, and aircraft repair and maintenance.

Obviously, five lectures covering the above topics have to be abbreviated, but with the purpose of the program being to "introduce" aviation to high school students, it serves very well. Mr. Albright has done a considerable amount of planning on the lectures in order to include the important concepts. (The thought being, if the students are made sufficiently interested in the subject, they will make the effort to learn more.)

In addition to the lecture series, Mr. Albright takes three students at a time in his Cessna 180 for a flight, during which each student sits at the controls for fifteen minutes in order to "feel" the airplane respond to the various movements of the controls. These flights also give the opportunity to explain the functions of the instruments and for naming the parts of the airplane. For the majority of the students, this is their first ride in an airplane.

The lectures are held after regular school hours, and flights are arranged during students' study halls. All students making the flights must have parental permission.

Mr. Albright works through the school board and superintendent in initiating the program. It is presented as an enrichment of the science curriculum, and is entirely voluntary on the part of the students. (Seventeen students were taking the course at Broadview.) The costs are borne by the school and amounts to less than \$15.00 per student.

Thus far, Mr. Albright has presented the program in schools at Lavina and Broadview and plans are being made for a number of other schools in Central Montana to offer it to their students. If student reaction is the main criteria for the measure of success, then this program will be a yearly offering in these schools, due to the fact that the students have shown such a great deal of interest and enthusiasm.

This is the type of effective aviation education program that can succeed, because it is instituted by the people who know aviation best and is a cooperative effort of operator, school board, and school administrator. As the young people are the ones benefiting, this program will help ensure the future of aviation in Montana.

Anyone who would like more information about this program can contact Mr. Rolan Albright, Round-up, Montana, at Albright Flying, Inc.



CALENDAR

January 1, 1964 — HAPPY NEW YEAR!!!

January 8—Great Falls—Montana Aeronautics Commission monthly meeting.

March 2 through 11—Great Falls—3rd Flight Instructors Refresher Course.

Spring, 1964 — Billings — Montana Pilot's Association Annual Convention: "Montana Centennial" will be the theme—Mark your calendar! Watch for further announcements!

Winter Flying Weather in the Yellowstone Valley

OR

The Wind Direction Makes the Difference

by

Ralph E. Gumpf, Meteorologist in Charge

WBAS, Billings, Montana

Nearly all of the poor flying weather situations affecting the Yellowstone Valley during the winter are associated with outbreaks of cold air from Canada, and development of north to east winds. These winds are caused by a combination of meteorological factors, the most important being the presence of high or rising pressure over Canada, eastern Montana and the Dakotas. As an easterly wind moves into eastern Montana and continues westward up the Yellowstone Valley, it is moving up-hill, climbing about 1,000 feet for every 100 miles it moves westward. For example, if a parcel of air starts out at Miles City, by the time it reaches Billings it will have been lifted 1,000 feet by the sloping terrain. Upon reaching Livingston it will climb another 1,000 feet and in the next 15 miles west of Livingston, it will climb another 1300 feet to the summit of Bozeman Pass, one of the critical points on the airway between Billings and Belgrade (Bozeman Airport). Generally, such lifting of fresh Continental or Arctic air is accompanied by snow and/or fog in the Yellowstone Valley. Recalling our high school physics, unsaturated air will cool by about 5.5° F. per 1,000 feet of lifting—if it becomes saturated during such cooling, it will still cool by about 3.3° F. per 1,000 feet. This, essentially, is the primary fog/low stratus causal factor.

If there is overrunning of moist air from the west or southwest at levels above the easterly winds, then we have one of the most hazardous winter flying weather situations. Ceilings in this combined up-slope and overrunning situation are generally 600 feet or less over an extended area of the Yellowstone Valley and there is little or no daytime improvement. On the other hand, with only up-slope conditions prevailing, ceilings may be 500-1,000 feet at night and show improvement to between 1,000 and 2,000 feet during early afternoon. In some of these situations it is not at all uncommon to see the

sun's disk through cloud layers while it continues to snow lightly throughout the day. Ceilings in either case may correspond to actual cloud bases or they may be classified as "indefinite" because of accompanying fog and variable intensity of the precipitation. Without overrunning present, precipitation is usually in the form of light snow or ice crystals and both ceilings and visibilities may permit a limited amount of VFR flying during latter parts of mornings and early afternoons where the terrain is not mountainous.

ICING: Icing associated with arctic air moving up-slope is in most cases not heavy or severe enough to constitute a hazard to winterized aircraft. At low temperatures in arctic air, there is not sufficient moisture for severe icing, and available moisture usually is solid state rather than supercooled liquid. In the overrunning condition, however, an inflow of moisture occurs, usually from the west or southwest at 10,000 feet and above. This, together with up-slope at lower levels, often results in hazardous conditions for both VFR and instrument flights, because of the icing aloft combined with poor visibilities, moderate to heavy precipitation and low ceilings.

FOG: Persistent fog is not characteristic of most areas East of the Continental Divide in Montana unless shallow cold air is present in a nearly stagnant flow. The most persistent fog in the Yellowstone Valley occurs when a cold front has become stationary at some point west of Billings and is about to return eastward as a warm front. Dense fog readily forms in the shallow cold air, particularly if there has been precipitation in the past 6-18 hours. This type of fog is most prevalent in the area Billings eastward to about Miles City.

Another persistent fog situation, which may affect the Yellowstone Valley along with other sections of the State, occurs in connection with an outbreak of shallow cold air from

Canada. This fog usually advertises itself, when after the passage of the cold front we note that several Alberta stations are reporting fog and/or very low ceilings. Radiosonde reports and other upper air observations show a shallow layer of cold air ranging from 1-4,000 feet deep with a sharp temperature inversion above. When such an air mass reaches the Yellowstone Valley, clear skies may continue during daylight hours, but after dark, fog and/or very low stratus clouds form rapidly. Occasionally, fog and low clouds will form rapidly upon the arrival of the cold air; however, in these cases the northeast flow must be preceded by some form of relatively warm precipitation.

Danger areas in the Yellowstone Valley are the Hysham Hills (60 to 70 miles northeast of Billings) and Bozeman Pass (about 20 miles west of Livingston). Ceilings at Billings and Miles City should be at least 1300 and 2,000 feet respectively in order to have minimum clearance in the Hysham Hills. These hills rise sharply to about 1200 feet above the general level of the Yellowstone Valley in that area. In the case of Bozeman Pass, ceilings at both Livingston and Belgrade (Bozeman Airport) should be not less than 2500 feet for VFR flight through the Pass. A word of CAUTION—these ceiling limitations should be used with prudence in the light of the prevailing meteorological situation, because it is possible to have showers of snow or other localized conditions prevalent in the Hysham Hills and in Bozeman Pass which are not representative of the general weather situation elsewhere in the Yellowstone Valley. This also applies to the narrow canyon in the upper Yellowstone Valley between Livingston and Yellowstone National Park.

A Favorable Winter Weather Situation—Westerly Wind Pattern.

Any weather pattern which will cause a westerly wind flow at the ground and aloft will in most cases produce VFR flying conditions in the Yellowstone Valley. If poor flying weather does exist, the onset of a westerly wind—especially a southwest wind—may be taken as an indication that improvement can be expected within a few hours at most. The typical westerly pattern is one

showing high pressure over the Great Basin Area and low or falling pressure in Alberta and Montana East of the Continental Divide. There are, of course, exceptions to all rules; poor flying weather can and does occur in connection with a westerly flow, but such occurrences are usually of brief duration. In the Upper Yellowstone Valley, i.e., Livingston to Yellowstone Park and Bozeman to Belgrade and westward, the passage of a cold front in a westerly flow may produce several hours of poor flying weather. Generally though, unfavorable flying weather with a true westerly flow doesn't last long. The most common flying hazard associated with westerly wind situations is mechanical turbulence (air flowing over rough terrain), but this has been the subject of earlier articles in this series. In westerly flow over mountains, turbulence can be found almost everywhere, but it is usually worse on lee slopes at elevations near mountain ridges heights.

In the absence of weather reports when the pilot has no access to a means of communication, he must make his own decision about flying, judging from local weather conditions. His most dependable criteria in the Yellowstone Valley should be the strength and direction of the wind, and of course, the appearance of the sky. If the wind direction is in the northeast quadrant, particularly with speeds of 15 knots or higher, local weather will sooner or later become worse. On the other hand, with a wind direction between west and south the odds are in favor of VFR flying or improvement in the current weather (watch for turbulence in all strong wind conditions.)

A word of CAUTION—there may be a cold front just out of sight which could usher in a northeast flow and produce instrument weather in a short time. So don't guess—be sure—and as soon as possible listen to the latest weather reports from the nearest FAA Flight Service Station radio, or call the nearest weather bureau or FAA Flight Service Station for a weather briefing.

HAVE YOU READ?

The excellent article in the December issue, 1963, of the Flying Magazine, on Robert Johnson and the Johnson Flying Service in Missoula.

Air Taxi Service Guide To Be Issued

The Civil Aeronautics Board announced today a major step in bringing improved air service to smaller communities not on the scheduled airline network. The first Air Taxi Service Guide will be issued December 1st as Part 3 of the Quick Reference Edition of the Official Airline Guide.

The CAB said that while the Air Taxi operators have promoted their services locally they have operated under the major handicap of being practically unknown in the large metropolitan centers. The dominant passenger traffic flow is from these larger cities to the small communities and return.

The new Guide will make detailed information about participating Air Taxi services available through the thousands of persons working for any airline or travel agency office.

The development of the Guide follows a recommendation made by CAB Chairman Alan S. Boyd in an address before the National Air Taxi Conference in 1961. The publication was facilitated by cooperative efforts of representatives of the Official Airline Guide, the Air Taxi Conference, the Air Transport Association and government agencies including the Federal Aviation Agency and the Post Office Department.

There are more than 2,600 Air Taxi operators registered with the Federal Aviation Agency. The traveling public can reach nearly any community in any of the 50 states through the services of the non-subsidized Air Taxi.

The Guide will list the cities most frequently served by members of the Air Taxi Conference. The airport name will be listed along with exact fares for single-engine and twin-engine aircraft, the maximum number of passengers who can be carried, and estimated flying time from one city to another.

Air Taxi operators are direct air carriers and provide, without subsidy or federal certification by the Civil Aeronautics Board, either scheduled, irregular, or demand services in both intrastate and interstate operations. The Air Taxis provide their services for passengers and property with aircraft having maximum take-off weight of 12,500 pounds or less.

Twenty Nine Graduate From First State-Sponsored Aviation Mechanics Refresher Course



GOVERNOR VISITS—Gov. Tim Babcock views a cutaway engine with Giles Russell, principal of the Helena aeronautics trade school; William Wyman, Aeronautics Commission pilot, and Jack Wilson, safety and education officer for the commission and course manager.

The following 29 Aviation Mechanics were awarded Certificates of Merit from the Montana Aeronautics Commission in recognition of their efforts to up-grade themselves and their profession by completing an 8-day Refresher Seminar completed December 9th in Helena:

Jack Archibald, Glacier View Skyways, Inc.; Robert Boles, Boles Aviation; Douglas Burgess, Johnson's Flying Service, Inc.; Floyd J. Carlson, Central Air Service, Inc.; Dennis P. Eigen, Sky Flight, Inc.; Robert D. Ellis, Johnson's Flying Service, Inc.; Joe Engel, Point Aero Service; Darrell Fenter, Gillis Aviation; Olivio Giacoletto, Butte Aero Sales & Service; LeRoy Gillet, Gillis Aviation; Donald W. Guinan, Mendel Flying Service; Geo. A. Houdek, Shelby; Gary Jacobson, Lynch Flying Service, Inc.; Rudolf Jacobson, Modern Aire Flight Service; Chas. W. Karinen, Livingston Aero; Arnold Lindberg, Cut Bank; Edwin Lonnevik, Johnson's Flying Service, Inc.; Don Luther, Severson Air Activities; Eugene Mendel, Mendel Flying Service; John Morrison, Morrison's; John Nordhagen, Choteau Flying Service; Wallace Patefield, Skyways Repair; A. J. Patenaude, Red Lodge Airways; Albert Peterson, Sidney; Bin Rowland, Montair (Montana Airmotive); John R.

Spear Jr., Tope's Air Spray; Philip Timm, Timm Aero Service; Arlin Wass, Flight Line, Inc.; Matt Zupan, Miles City Aero.

The Seminar held in the classrooms of the Department of Aeronautics and Related Trades of the Helena Senior High School was sponsored by the Montana Aeronautics Commission as part of their continuing Aviation Education program and conducted by the representatives of three major aircraft companies, their component manufacturers and the FAA.



Kenneth E. Gardner, Cessna Aircraft Company, during a lecture session.

Compiled from the critiques of the attending trainees, the consensus of opinion is that the course was a highly successful, effective and

worthwhile venture, the success was due mainly to the complete cooperation of the following companies and agencies and the high quality of instruction given by their representatives: Mr. Giles Russell, Principal of the Department of Aeronautics and Related Trades of the Helena Senior High School; Lee Mills, Supervising Inspector, FAA's General Aviation District Office in Helena, Don Wright, Safety Inspector of the FAA's General Aviation District office in Billings, Mr. Joseph J. Manning, FAA's Central Region Office, Kansas City, Missouri, Mr. Bob Buttgenbach, Sales and Service Engineer for Beech Aircraft Corp., Mr. Oscar Kimzey, Manager of Beechcraft Mobile Training School; Robert Gift, Field Service Engineer for the Piper Aircraft Corp.; Fred Costello, Mid-Continent Airmotive Corp.; Alan Eurich, Electronics Consultants, Billings, Montana; Kenneth E. Gardner, Cessna Aircraft Company; James Mike McEniry, Pacific Airmotive Corp.; Dale B. Norton, Combs Aircraft, Inc.; Tony Orgain, Champion Spark Plug Co.; Ralph Persun, Lycoming Division; Don Sheets, Bendix Corporation; William H. Troy, Lycoming Division, AVCO Corp.; and William Wyatt, Scintilla Division of Bendix Corp.



Bob Buettgenbach, Beech Aircraft Corp.; Dale Norton, Combs Aircraft Inc.; Oscar Kimzey, Beech Aircraft Corp.'s Mobile Training School.

Awards to the trainees completing the course were made by Mr. Herb Jungemann at a banquet held the evening of December 9th at Jorgenson's Holiday Inn. Director, Charles A. Lynch, made the appreciation awards presentations to the companies' and agencies' representatives present at the dinner—which read, in part, "in recognition for distinguished service in support of the Aviation Education Program in Montana by providing aid and instructional assistance to the Montana

Aeronautics Commission." The Director stated that awards would be forwarded to those participants unable to be present at the dinner.



Herb Jungemann, Chairman of the Aeronautics Commission address the banquet. Seated beside him is Director Lynch and in the foreground is Ted Cogswell, commission member.



Tony Orgain, Champion Spark Plug Company—demonstration heat effect on a piston.



Alan Eurich, Electronic Consultants Service (ELCON) of Billings, Montana.



FAA OFFICIALS—who assisted with the mechanics course were, L. to R.—Don Wright, safety inspector for the Billings GADO; Joseph Manning, Kansas City, Mo., regional chief of general aviation maintenance, and Lee Mills, supervising inspector at the GADO office in Helena.



"COFFEE BREAK" GATHERING—L. to R.—Jack Wilson, Course Manager; Bill Wyatt, Scintilla Division of Bendix Corp.; Dale Norton, Combs Aircraft Inc.; Bill Troy, Lycoming Division of Avco Corp.; (Troy was very ably assisted by Ralph Persun, not present for pictures); James Mike McEntry, Pacific Airmotive Corp.; and Fred Costello, Mid-Continent Airmotive Corp.

Mr. Jungemann, MAC Chairman, received several telegrams, including a wire from Mr. Najeeb Halaby, Administrator for the Federal Aviation Agency, offering his congratulations to the Commission for the successful completion of the "first state sponsored Aviation Mechanic's Refresher Seminar"—his hope that the foresight shown will encourage other states to initiate similar programs and expressing his appreciation to the com-

mission's effort in furthering safety in aviation. Another telegram of congratulations was received from Mr. J. M. Beardslee, Director of the FAA's Central Region office in Kansas City, Mo., commenting on the forward outlook of the Commission and their emphasis placed on Aviation Safety.

Jack Wilson, newly appointed Safety and Education Officer, was course manager.



Don Sheets, Bendix Corp., Aerospace Div.—During class demonstration on fuel injectors.



Robert Gift — Showing an assembly cutaway model during Piper Aircraft Corp.'s presentation.

FEDERAL AVIATION AGENCY SCHEDULED ITINERARY LISTING

Airport	Jan.	Feb.	Mar.
Bozeman _____ (Gallatin Field)	16	13	12
Culbertson _____		5	
Glasgow _____	22		18
Glendive _____			4
Great Falls _____ (International)	9	6	5
Lewistown _____	8		25
Miles City _____		19	
Missoula _____ (Missoula County)	23	20	19

REMINDER:

Effective January 1, 1964—the new Federal Communications Commission regulation regarding the fee schedule for airplane radio licensing will go into effect. All new licenses and all license renewals will be liable to the \$10.00 fee for a 5 year license.

COMBINED OPERATION BEGINS AT ADC GREAT FALLS SAGE DIRECTION CENTER

A milestone in military and civil air traffic control was marked on December 1, 1963, when the Air Defense Command and the Federal Aviation Agency began combined operations in the Great Falls SAGE (Semiautomatic Ground Environment) Direction Center at Malmstrom Air Force Base, Montana.

FAA's new Great Falls Air Route Traffic Control Center will make joint use of ADC's operational facilities, computers, long-range radars and related equipment to provide air traffic control services to civil and military aircraft operating in approximately 135,000 square miles of air space over Montana and the western half of North Dakota.

The integrated Air Defense/Air Traffic Control facility at Great Falls is part of the program designated Northern Tier Integration Project (NOTIP).

SAGE is the lightning-fast command control system which fills a key role in the network of Aerospace Defense Forces commanded by the Air Defense Command — U. S. Air Force member of the Joint Service North American Air Defense Command (NORAD) U. S.-Canadian organization.

The operational commissioning marks the end of FAA's old Great Falls center and gives the new facility a considerably enlarged control area. The area east of the center has been extended approximately 180 miles to include certain parts of North Dakota which previously lacked FAA radar coverage for civilian aircraft. The over-all control area extends approximately 610 miles west to east and 220 miles north to south.

Although this is the first collaboration of an FAA Center and Air Defense Sector for air traffic control purposes, the Air Defense Command already shares 42 radar stations throughout the United States with the FAA under the joint use program.

While it retains individual identity as an FAA facility, the Great Falls NOTIP Air Route Traffic Control Center represents a new concept in the area of common Air Defense/Air Traffic Control surveillance. Joint use by FAA and ADC of long-range

radars for Air Defense, Air Traffic Control High Altitude Civil Jet Advisory Service and other related purposes has been underway for a number of years. Location of the FAA facility within the SAGE Center provides additional advantages not available until now in air traffic control. FAA use of the SAGE System will not affect current military manning nor interfere with Air Defense operations of the Great Falls Sector.

Under the new concept, FAA controllers, for the first time in air traffic control, will have available processed digitalized data from a number of radar sites which will provide a composite picture of the air situation for the entire area covered by the various detection and identification systems. This data reaches the center via telephone circuitry. High speed computers combine the radar inputs from the various sources in micro seconds and display them in the form of alpha-numerics, including aircraft identity, altitudes (both assigned and reported) and other information the controller can call for electronically.

Other important display features include such information as Air Defense Identification Zones, climb corridors and flight test areas, high and low altitude airways, aircraft trails, identity as to SAGE or FAA tracks, geographical boundaries and landmarks, and a common tracking system for the entire area.

Combined with the expanded radar coverage, the use of modified SAGE equipment will speed up the FAA's plan to provide area positive control service above 24,000 feet in the Northern Tier area.

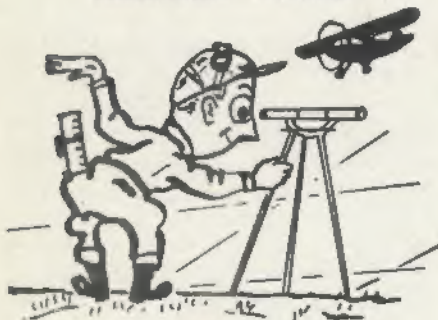
The FAA's new center at Great Falls is the 20th and next to last center to be relocated in new operating quarters under the Agency's current center consolidation and realignment program. Purpose of this program is to achieve greater operational efficiency and economy in air traffic control.

Col. Jean H. Daugherty is the commander of the Great Falls air defense sector. The average air defense sector within Air Defense Command employs from 1,300 to 1,400 Air Force personnel of whom approximately

350 are assigned to sector headquarters and the direction center.

Chief of the FAA Great Falls NOTIP center is Charles Irwin, formerly air traffic supervisor for the Indianapolis area. The FAA center staff consists of about 100 controllers and maintenance specialists.

AIRPORT NOTES



By James H. Monger

Glendive—The Montana Aeronautics Commission has approved a loan to the Glendive Airport Board and City of Glendive in the amount of \$25,000.00. This loan will be used to aid in the financing of a future project which will consist of constructing a new East-West Runway on the Glendive Airport. The East-West Runway is felt to be necessary due to the strong crosswind conditions that occur occasionally to the main runway.

Missoula—The Missoula County Airport Commission has been approved for a \$1,000.00 grant from the MAC to cover part of the preliminary engineering costs for a proposed development on the Missoula County Airport. This preliminary engineering study will outline the financial and engineering and construction problems on the extension of the Northwest-Southeast Runway. It is now planned to extend the runway 1300 feet. Other developments on the Missoula Airport will be reconstruction of an East-West Taxiway; constructing a new stub taxiway to the ramp, and constructing a maintenance equipment building.

Jordan—Representatives of the MAC met with the Jordan Commercial Club and discussed the suggested future development of the Jordan Airport. It is hoped that the Garfield County Commissioners will sponsor an airport improvement which would consist of paving a runway 3500 feet



YELLOWSTONE STATE AIRPORT IN ITS PRESENT STATE OF CONSTRUCTION

long to replace the existing sod runway.

General Aviation Airport Program—Four new State-Local Airports were completed in 1963. These were at Augusta, Boulder, Whitefish and Polebridge. Contracts will be awarded on two similar type airports this Winter—these being located at Seeley Lake, and Lincoln. Another possible development in Montana will be at Marias Pass. Two new airports were developed with private funds this year and were located at Anaconda and Ashland. Montana has produced a total of six new airports in 1963.

The 1964 program will be equally productive, with the majority of attention focused on Eastern Montana. The new airports scheduled for 1964 will be at Hysham, Ekalaka, Rye-gate, Lavina, Richey, Wibaux and Broadus. Some site-location difficulties are being encountered at Richey, Wibaux and Broadus, however, with local assistance we hope to clear these up early in 1964. In addition to the smaller airports just mentioned, there will be the usually high number of Federal Aid Airport improvement programs at most of the major airports in the State.

West Yellowstone—Adverse weather has suspended the construction on the new Yellowstone State Air-

port, and as of October 30, 1963, the project is approximately 49 per cent completed.

Helena—The Montana Aeronautics Commission has loaned the Helen Joint City-County Airport Board \$10,000.00 to aid in the financing of a new piece of snow removal equipment. Total cost of the snow plow was approximately \$20,000.00. The snow plow has a reversible hydraulic blade, with a wing blade and an automatic sander attached to the box.



Lobby of Dillon administration building during final inspection tour. L. to R.—Ed Swetish, Harold Briggs; Dillon Airport Board Members: Earl Morton, FSS Chief; Charles Lynch, MAC Director and William Wyman, MAC Chief Pilot.

Dillon—The final inspection was held on November 29th, on the Beaverhead County Airport Administra-

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Dillon—The final inspection was held on November 29th, on the Beaverhead County Airport Administra-

tion Building. Federal Aviation Agency will move their flight service station into their new quarters this year and the building is expected to be in full operation January 1, 1964. The total cost of the State-Local project was \$80,000.00.

Seeley Lake — Bids were opened December 11, and a contract awarded for the construction of a new General Aviation Utility Airport at Seeley Lake. The contract went to Walter Laas Construction of Chester, who submitted the lowest of six bids, \$20,661.90. The new airport will be completed by July 1, 1964. Missoula County is sponsor of this Local-State project.

Marias Pass—Emergency Strip — The MAC approved the application of Flathead County for the construction of an emergency airstrip 2 miles west of Marias Pass. Construction will begin in mid-1964. The runway will be stabilized turf, 3400 feet x 100 feet.



Aerial view looking west of proposed strip at Marias Pass.



TOWER OPERATIONS

MONTANA TOWER-CONTROLLED AIRPORT OPERATIONS

OCTOBER 1963

	Total Operations	Instrument Operations
Billings	8326	481
Great Falls	5636	790
Missoula	3983	225
Helena	3022	74

NOVEMBER 1963

	Total Operations	Instrument Operations
Billings	7715	512
Great Falls	4242	760
Missoula	2679	227
Helena	2236	95

CONGRATULATIONS!



CERTIFICATES ISSUED RECENTLY TO MONTANA FLYERS

Young, Ralph S., Billings—Commercial
McCoy, Burl M., Mills, Wyo.—Student
Young, Ronald F., Billings—Student
Young, Ronald F., Billings—Private
Agnaw, Colvin H., Billings—Private
Popp, Alex D., Park City—Private
McLaughlin, Howard A., Tacoma, Wash.—Private
Thorpe, Forrets L., Denver, Colorado—Student
Hodapp, James Casper, Alexandria, Ohio—Student
Little, Bridger P., Glasgow—Student
Logan, Ernest R., Glasgow—Student
Langen, Kathryn L., Glasgow—Student
Markle, Lois W., Glasgow—Private
Rodeghiero, Roy C., Roundup—Student
Vrenish, Joseph J., Roundup—Student
Hurry, James J., Billings—Flt. Instr-Rotorcraft
Heberle, Raymond, Custer—Private
Bakken, Clarence J., Medicine Lake—Student
Eder, Bert P., Poplar—Student
Hobbs, Edwin B., Miles City—Student
Lefever, Hollis K., Lewistown—Private
Marshall, Charles L., Sheridan, Wyo.—Private
Odegard, Paul N., Billings—Private
Hart, Vernon C., Absarokee—Student
Phair, James R., Froid—Student
Hendrickson, Kenneth E., Medicine Lake—Student
Buss, Norman, Medicine Lake—Student
Clark, Amos C., Red Lodge—Student
Groves, Mable C., Cody, Wyo.—Private
Bailey, Ronald R., Sidney—Student
Wise, James K., Billings—Private
Steadman, Gene B., Broadus—Student
Jensen, Kathleen, Redstone—Student
Blankenship, Philip E., Roundup—Private
McNees, Kenneth E., Poplar—Commercial
Neyland, Gerald G., Billings—Student
Brown, Innes E., Roundup—Student
McCrary, Eugene M., Outlook—Student
Rice, Cleve B., Roundup—Commercial & Flight Instructor
Halseide, Curtis B., Culbertson—Private
Herrod, Thomas E., Billings—Ground Instrument Instructor
Smith, Gordon F., Minnesota—Private
Brush, James W., Billings—Student
Woltermann, Gary G., Columbus—MEL on Commercial
Heare, Ralph E., Red Lodge—Student
Brenden, Thomas A., Scohey—Flight Instructor
Baker, Jack D., Billings—Flight Instructor
Krug, Charles D., Glendive—Private
O'Hara, David C., Billings—Private
Shauer, Leonard A., Billings—Student
Brown, Dennis J., Broadview—Student
Olsen, Douglas C., Billings—Student
Pehl, Charles E., Terry—Student
Mays, Glenn E., Westby—Flight Instructor
Engelke, Charles W., Froid, Student
Calderwood, Derek T. M., Culbertson—Student
Munson, Rollin G., Plentywood—Student
Ukena, William J., Red Lodge—Student
Boyett, Roy, Billings—Private
Larsen, H. N., Jr., Butte—Private
Powell, Louis H., San Francisco, Calif.—Blue Seal on Commercial
Tillitt, George N., Forsyth—Blue Seal on Commercial
Smelser, Walter R., Helena—Blue Seal on Commercial
Lundquist, Frank E., Billings—Blue Seal on Commercial
Oksendahl, Nels L., Redstone—Blue Seal on Private
Kalbfleisch, Paul R., Filer, Idaho—Blue Seal on Private
Fly, Curtis E., Billings—Blue Seal on Private
Flahart, Donald O., Rapid City, S. D.—Blue Seal on Private
Bryce, Eric A., Plains—Blue Seal on Private
Brynjulson, Julian G., Plentywood—Blue Seal on Private
Powers, David K., Laurel—Blue Seal on Private

Rush, Weldon M., Scobey—Blue Seal on Private
 Neils, Robert L., Libby—Blue Seal on Private
 Hengel, Raymond J., Rapid City, S. D.—Blue Seal on Private
 Hickman, Jim L., Hamilton—Blue Seal on Private
 Stout, Edward E., Shelby—Blue Seal on Private
 Adkins, M. G., Libby—Blue Seal on Private
 Hellinger, Donald R., Devon—Blue Seal on Private
 Sabo, Dorothy A., Bozeman—Blue Seal on Private
 Chettham, James A., Dutton—Blue Seal on Private
 Janssen, Lewis C., Coalwood—Blue Seal on Private
 McKennett, Herbert T., Bowman, N. D.—Blue Seal on Private
 Shawhan, Donald M., Billings—Blue Seal on Private
 Spiller, Holden J., Terry—Blue Seal on Private
 Nelson, Ralph F., Methesda, Md.—Blue Seal on Commercial
 Roberts, Elmer J., Wolf Point—Blue Seal on Commercial
 Lyon, John J., Shelby—Blue Seal on Private
 Hibbard, Jane Goodsill, Helena—Student
 Hamilton, William R., Three Forks—Private
 Widmer, Katherine T., Bozeman—Private
 Henderson, William W., Belgrade—Student
 Skabo, Paul S., Minot, N. Dakota—Student
 Biechler, Donald R., Glendive—Student
 Charlton, Darrel T., Bozeman—Student
 Fox, Francis J., Bozeman—Student
 Ross, Howard L., Bozeman—Student
 Beswick, Curtis A., Bozeman—Student
 LaTourette, Thomas L., Bozeman—Student
 Sammons, Richard Grove, Butte—Student
 Torgerson, Sydney A., Bozeman—Student
 Petaja, Richard A., Bozeman—Student
 Grazier, Don C., Dixon—Student
 Valentine, Jerry G., Conrad—Student
 Reely, John L., Missoula—Student
 Berka, James W., Missoula—Student
 Good, Garth Campbell, Missoula—

DC-2 type rating to Com., ATR, AMEL, DC-3
 Gunn, Elizabeth M., Helena—Private
 Larson, Hilbert R., Missoula—Com. ASMEL
 Nickey, Eugene W., Havre—Student
 Hoopes, Kent L., Utah—Student
 Wolf, Kenneth M., Shelby—Student
 Wilson, Rob Roy, Great Falls—Student
 Wetherell, Mary Lucille—White Sulphur Springs—Student
 Hettrick, Walter E., Big Sandy—Student
 Laine, Maurice D., Jr., Missoula—Private
 Olson, Floyd E., Missoula—Private

CHANGE IN REPORTING WIND DIRECTION IN AVIATION WEATHER OBSERVATIONS

The aviation weather report is going to change its appearance. On and after January 1, 1964, the wind portion of the report will look like this, "2118 instead of like this:

↑ 18."

At present, the direction of the surface wind is reported to 16 points by means of arrows. After January 1, 1964, the direction will be reported to the nearest 10 degrees by means of a 2-digit number. This system will allow the wind to be reported to 36 points.

The reporting of wind direction to the nearest ten degrees is not new. A 2-digit number has been used for many years to report the direction of the winds aloft. In addition, automatic weather observing systems at 22 widely scattered locations are presently reporting surface wind direction in tens of degrees. Thus the change on January 1, 1964, will make for more uniform reporting procedures.

Here is an example of the present format:

SBY 04GFH 153/78/74 → 4/998

When the change takes effect, this aviation weather report will look like this:

SBY 04GFH 153/78/74/250/4/998

The arrows, which now show the direction of the surface wind, have been replaced by a 2-digit number. Instead of a report of a west-south-west wind, the wind will be reported as blowing from 250 degrees with regard to true north.

Aeronautics Commission Feted At Havre

At the invitation of the Havre City County Airport Board, the Montana Aeronautics Commission held their November meeting on November 13th in the administration building on the Havre Airport.

At a dinner, held the evening of November 12th at the Havre Elks Club, the Airport Board welcomed the members of the Montana Aeronautics Commission and MAC staff members. Members of the MPA Hangars at Kremlin, Big Sandy, and Chinook were among those attending the dinner and the preceding social hour held in honor of the Montana Aeronautics Commission. Walt Hensley, of Hensley Flying Service, acting as Master of Ceremonies made his opening remarks to the visitors and introduced the Mayor of Havre, Pete Hamilton. Mayor Hamilton, an original Havre Flying Club member, extended his welcome to the Commission; wished them a good meeting and thanked the Commission for all past considerations. On behalf of the Airport Board and all flyers in the area, Mayor Hamilton emphasized the need of VHF navigational facilities for the Havre area.

Mr. Jack Hughes, representative of the Flight Operators on the Commission, introduced the other commission members—Herb Jungemann, Chairman; Gordon R. Hickman, Vice Chairman; Walter Hope, Secretary; E. B. Cogswell, Clarence R. Anthony, Carl W. (Bill) Bell, and Charles A. Lynch, Director of the Montana Aeronautics Commission. The Director presented Mr. Frank Wiley, Commission Advisor, and his staff members—Jim Monger, Assistant Director; Marge Davis, Office Manager; and William L. Wyman, Chief Pilot.

Mr. Harold Ebaugh, Havre Airport Manager and Mr. Gordon Sands, member of the City-County Airport, were introduced by Mr. Hensley, and Mr. Sands presented the nine members of the Aviation Committee of the Havre Chamber of Commerce.

At the close of the dinner, the members of the Commission had the pleasure of greeting many old friends from the city of Havre.

The members of the Commission and staff wish to extend their sincere appreciation for a fine dinner and extremely enjoyable evening.

MONTANA'S MAJOR SKI AREAS



FLY IN TO SKI

Nationwide, the availability of airports, (both large terminal and the smaller general aviation airports open all winter) serving major ski areas is being stressed. We wish to point out that Montana takes the back seat to no state in providing this convenience!

The December issue of Flying magazine carries a fine feature story on "fly-in" and ski covering the entire United States and highlighting four of Montana's major ski centers and their location relative to an airport. It is hoped that this story will encourage persons, not only from Montana, but from over the United States to come to Montana to participate in our winter sports and to also point out that it is no longer the problem of time and distance—one can fly via private aircraft or airlines and have an enjoyable weekend ski holiday.

One recent addition to Montana's ski facilities is a new installation at Red Lodge's winter wonder ski area—high in the Beartooth Range, Clark's Gateway—Motel and Child Care Center, located 1 mile south of Red Lodge at the Grizzly Peak Ski Run Turn-off. Amos and Gladys

Clark have solved your problems of the small child's care, while you ski! The center is approved by state agencies, has ideal conditions, planned play activities and arrangements can be made for additional care (over the regular hours) up to 24 hours.

The state advertising department has made available an excellent brochure listing all major ski areas, (as depicted in the above shown Ski Map) their accommodations, means of transportation from airport to area and miscellaneous information. You may obtain this brochure by sending a card to Montana State Advertising Department, Helena, Montana.

Whether you are a Flying Enthusiast who likes to ski—or a Skiing Enthusiast who likes to fly—Montana offers the best! "Fly-In"—we have a snow spot for every taste and every talent!

APPROACH TIME — The time given the pilot to make him happy while attempts are made to figure out what to do with him.

An expert is someone who is called in at the last minute to share the blame.

FOR SALE: Maule M-4, 1963, 4 place 115 MPH. Dealer-Demonstrator. 145 Hp. Continental; Narco Superhomer-Flasher Beacons, and other custom equipment; 75 hours total time since new; discount price \$10,100.00—Offer open until January 15. Contact Emery Anderson, Box 261, Culbertson, Montana. Phone: 196 after 5:00 p.m.

FOR SALE: Piper PA 18 "135" 1953, Model —Excellent condition with fresh periodic. Total time on engine and aircraft 1990 hours—743 hours since major and engine was chromed. Price \$3,500.00 without sprayer—\$4,000.00 with 90 gallon Sorenson drop tank—Contact: Laurence Ariz, Jordan, Montana.

FOR SALE: 1946 Taylorcraft—BC 12D-85—VHT 2—lights electric TB; Fabric—wings 63, Fus. 60—400 Engine SMOH. Price: \$1,950.00; Albright's Flying Inc., Roundup, Montana.

FOR SALE: "HEY, I've got airplanes for sale. See me!" Mendel Flying Service, Malta, Montana.

FOR SALE: AERONCA CHAMPION—7AC—65 Hp.—80 hours since Major Overhaul—Completely Recovered in May '63—New tires—Excellent Condition—Very Clean. Always hangared. Price: \$2,000.00; Contact Phil Huebner—1209 1/2 11th Avenue—Helena, Montana; Phone 442-0060 daytime.

FOR SALE: Piper PA-18 "150"—1953 Model —never used as sprayer—owned by "Miles City Aero Service, Inc. 1600 hours, 400 hours since engine major—Excellent condition, fresh periodic will be given at date of purchase. Price: \$5,500.00. Contact: Miles City Aero Service, Inc.—Miles City, Montana. Phone: 232-1354.

FOR SALE: Late 1948 Stinson S.W.—963 total A&E—387 on major including all heavy Jugs.—Fabric, all high green with late-type elastic finish in metallic green & beige. (Cost over \$500.00.) Complete custom shock mounted L.F.R. panel with late type gyros; Including carb. throat temp.—probe gauge & elec. compass; (over \$700.00.) New V.H.T.—Narco omni—12 channel radio—New 6 ply nylon tires & tubes, late type 180 wheels, clips & blocks—All bulletins complied—licensed 'till Sept. '64. Picture on request. A spotless ship. Price: \$3,350.00—contact: John Bragg, Livingston, Montana, Phone 222-0057.

FOR SALE: Piper PA20, 125 hp., 520 hours since new, 212 hours on engine since TOH. Has Bendix LE-VHF and Mark 1 Omni-gator. New tires and tubes. Completely recovered with Irish linen and 20 coats of dope. All new windows and windshield, headliner, carpet and seats in Sept. '59—Licensed 'till Mar. '64. Price: \$3,500.00—Contact: Wayne Edsall, 718 North 17th—Bozeman, Montana.

FOR SALE: 1947 Cessna—140-164 hours SMOH—1255 T.T.—Wings covered '62—L.F. Radio & instruments—Air worthiness 'till May '64—Wheel Extension—Always hangared—Real clean. Price: \$2,500.00—Contact: Ellsworth Butler or Lawrence Faber—Big Sandy, Montana.

FOR SALE: Two J-3 cubs, better than average. One 85 hp. & one 65 hp. with aux. tank and fresh periodic. Your choice \$1,275.00. Also, 1949 Luscombe Observer T-S-F 90 hp.—Less than 450 hrs. T.T.—aircraft & engine. Complete with fresh periodic, skis, extra prop & factory spray equipment. Price: \$3,250.00. A Cessna 140—Recent major on engine—Dual brakes, electric T&B Narco Superhomer—Price: \$2,795.00; Call or write: Willy Rimby, Skycraft, Box 614, Lewistown, Montana; Phone: 538-5457 or 538-9448.

If you think you're lonely and neglected just think of Whistler's father.

The trouble with being a good sport is you have to lose in order to prove it.

"A SAFETY ALERT"

FUEL CONTAMINATION

WATER is the principal contaminant of aviation fuel. The actual contamination occurs through:

- (1) **CONDENSATION:** occurring in partially filled aircraft fuel tanks, and in storage and dispensing facilities such as underground tanks and fuel truck tanks.
- (2) **ENTRY OF OUTSIDE MOISTURE;** such as rain or snow entering through the aircraft tank gauge or vent system.

REMEMBER

For a safe flight drain fuel sumps at each preflight (and drain fuel screens as recommended by aircraft manufacturer to prevent water contamination.)

SCHEDULE OF SAWRS AND SECOND-ORDER STATION OBSERVATIONS

MONTANA AS OF 11-1-63

Station	Teletype Identifier	Observation Times (MST)
Broadus	4BO	0500, 1100, 1700, 2300
Drummond	DRU	Hourly—0600-1800
Elliston	ETM	0720, 1020, 1320
*Glendive	GDV	Hourly—0900-2100
Harlowton	HAL	Hourly—0800-1100, 1400, 1800
Monida	MQM	Hourly—0600-0900, 1100, 1300
*Sidney	SDY	Hourly—1500-1700, 1900
Thompson Falls	THM	Hourly—0800-2100
West Yellowstone	WEY	0700, 0900, 1100, 1300, 1600
Whitehall	WHT	0200, 0500, 0800, 1100, 1400, 1700, 2000, 2300
*Wolf Point	OLF	0710, 0910, 1210, 1510, 1710
		Hourly—0900-1900

*Schedule subject to change depending upon airline operations at these airports.

The above reports are from stations not connected to the teletype circuit, but reach the circuit via various teletype-connected centers during so-called "scan" periods.

R. A. Dightman, Meteorologist in Charge, WBAS, Helena

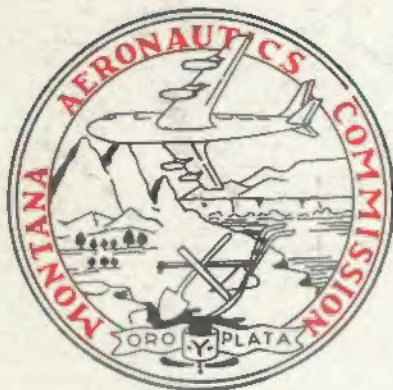
APPROACH SEQUENCE — A means devised by ATC to make a pilot last in line when he knows all along that he should be first.

DON'T fail to allow yourself a margin for error. Should you be forced to land, be where you can land safely.

MEMBER

NATIONAL ASSOCIATION OF STATE AVIATION OFFICIALS

PURPOSE:—"To foster aviation as an industry, as a mode of transportation for persons and property and as an arm of the national defense; to join with the Federal Government and other groups in research, development, and advancement of aviation; to develop uniform aviation laws and regulations; and to otherwise encourage co-operation and mutual aid among the several states."



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